EXHIBIT B

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF WEST VIRGINIA
AT CHARLESTON

IN RE: ETHICON, INC., PELVIC REPAIR SYSTEM PRODUCTS LIABILITY LITIGATION **THIS DOCUMENT RELATES TO WAVE 1**	**Master File No. 2:12-MD-02327** **JOSEPH R. GOODWIN** **U.S. DISTRICT JUDGE**

RULE 26 EXPERT REPORT OF ALAN D. GARELY, MD
PROLIFT

The following report is provided pursuant to Rule 26 of the Federal Rules of Civil Procedure. All of the opinions that I offer in this Report I hold to reasonable degree of medical or scientific certainty.

I. QUALIFICATIONS

I received my BA in Liberal Arts from Hampshire College in Amherst, Massachusetts in 1984 and graduated with an MD from Saint Georges University School of Medicine in Grenada, WI, in 1989. I did my internship and residency in Obstetrics and Gynecology between 1989 and 1993 at the Saint Vincent"s Hospital and Medical Center in New York City. I did my first year of fellowship in Urogynecology and Pelvic Reconstructive Surgery at the Sinai Hospital/University of Connecticut from July 1993-June 1994. My second year of fellowship was from July 1994-June 1995 at the Louisiana State University (LSU) Medical Center of New Orleans.

I remained at LSU as an Assistant Professor of Obstetrics and Gynecology until October 1997. From October 1997 until May 2002 I was the Associate Director of Urogynecology and Pelvic Reconstructive Surgery at North Shore University Hospital and an Assistant Professor of

Obstetrics and Gynecology at New York University School of Medicine. After leaving North Shore, I became the Vice-Chair of Obstetrics and Gynecology, Chief of Gynecology, and Director of Urogynecology and Pelvic Reconstructive Surgery at Winthrop University Hospital on Long Island and an Associate Professor of Obstetrics and Gynecology at the State University of New York, Stony Brook. From September 2009 until June 2012 I was the Director of Urogynecology and Pelvic Reconstructive Surgery at the Icahn School of Medicine at Mount Sinai, in New York. Since 2009 until the present, I am also an Associate Professor of Obstetrics, Gynecology, and Reproductive Medicine at Mount Sinai. Since July 2012, I have been the Chair of Obstetrics and Gynecology and Director of Urogynecology and Pelvic Reconstructive Surgery at the South Nassau Communities Hospital in Oceanside, New York. I remain active in the accredited fellowship program in Female Pelvic Medicine and Reconstructive Surgery at Mount Sinai and do formal teaching with medical students, resident, and fellows, every week. I have trained 17 fellows in Female Medicine and Reconstructive Surgery.

I received my Board Certification in Obstetrics and Gynecology in 1997 and my Board Certification in Female Pelvic Medicine and Reconstructive Surgery in 2013 (first time it was given).

I am a member of the American Urogynecologic Society (AUGS) and served on its Board of Directors from 2006-2009 and was the Director of the AUGS Government Relations Committee during that time. From 2000-2003, I served on the AUGS Public Relations Committee. I am currently the AUGS representative to the American College of Surgeons (ACS), and am in my second term on the ACS Obstetrics and Gynecology Advisory Board. I am a fellow of both the American College of Obstetricians and Gynecologists and the American

College of Surgeons. I have been an Oral Board Examiner for the American Board of Obstetrics and Gynecology since 2010.

I have been a Journal Reviewer for Obstetrics and Gynecology, International Urogynecology Journal and Pelvic Floor Dysfunction, Ob-Gyn Management, Nature (Clinical Practice Urology), American Journal of Managed Care, Journal of Reproductive Medicine, Expert Opinion on Emerging Drugs, Journal of the American College of Surgeons, and the Journal of Female Pelvic Medicine and Reconstructive Surgery.

I was given the Association of Professors of Gynecology and Obstetrics (APGO) "Excellence in Training" award in 2007. I was the AUGS-ACS Health Policy Scholar in 2007 and was a Berlex Foundation Scholar in 1997.

I have written 26 peer-reviewed publications with ten of them specific to pelvic floor mesh. I am the first author of the "Expert Opinion Series on the Surgical Treatment of Stress Incontinence" which was published in the December 2014 issue of Obstetrics and Gynecology (The Green Journal). I have written 4 book chapters on pelvic floor disorders and pelvic fistula. I have presented 38 papers and have given 88 lectures both nationally and internationally.

Publications

The evolution of evaluation and management of urinary or fecal incontinence and pelvic organ prolapse.
Steele SR, Varma MG, Prichard D, Bharucha AE, Vogler SA, Erdogan A, Rao SS, Lowry AC, Lange EO, Hall GM, Bleier JI, Senagore AJ, Maykel J, Chan SY, Paquette IM, Audett MC, Bastawrous A, Umamaheswaran P, Fleshman JW, Caton G, O'Brien BS, Nelson JM, Steiner A, **Garely A**, Noor N, Desrosiers L, Kelley R, Jacobson NS.
Curr Probl Surg. 2015 Mar;52(3):92-136. doi: 10.1067/j.cpsurg.2015.02.001. Epub 2015 Feb 7.
Review. No abstract available.

The evolution of evaluation and management of urinary or fecal incontinence and pelvic organ prolapse.
Steele SR, Varma MG, Prichard D, Bharucha AE, Vogler SA, Erdogan A, Rao SS, Lowry AC, Lange EO, Hall GM, Bleier JI, Senagore AJ, Maykel J, Chan SY, Paquette IM, Audett MC, Bastawrous A, Umamaheswaran P, Fleshman JW, Caton G, O'Brien BS, Nelson JM, Steiner A,

Garely A, Noor N, Desrosiers L, Kelley R, Jacobson NS.
Curr Probl Surg. 2015 Feb;52(2):17-75. doi: 10.1067/j.cpsurg.2015.01.001. Epub 2015 Feb 7.
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Noor N, Garely AD.
FP Essent. 2015 Mar;430:23-8.
PMID: 25756374

Diagnosis and surgical treatment of stress urinary incontinence.
Garely AD, Noor N.
Obstet Gynecol. 2014 Nov;124(5):1011-27. doi: 10.1097/AOG.0000000000000514. Review.
Erratum in: Obstet Gynecol. 2015 Mar;125(3):743.
PMID: 25437731

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Ginath S, Garely AD, Condrea A, Vardy MD.
Int Urogynecol J. 2013 Jan;24(1):113-8. doi: 10.1007/s00192-012-1845-5. Epub 2012 Jun 21.
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Related citations

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Ginath S, Garely AD, Luchs JS, Shahryarinejad A, Olivera CK, Zhou S, Ascher-Walsh CJ, Condrea A, Brodman ML, Vardy MD.
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Related citations

MRI pelvic landmark angles in the assessment of apical pelvic organ prolapse.
Ginath S, **Garely A**, Luchs JS, Shahryarinejad A, Olivera C, Zhou S, Ascher-Walsh C, Condrea A, Brodman M, Vardy M.
Arch Gynecol Obstet. 2011 Aug;284(2):365-70. doi: 10.1007/s00404-010-1648-1. Epub 2010 Aug 21.
PMID: 20730542 [PubMed - indexed for MEDLINE]

Recognition of occult bladder injury during the tension-free vaginal tape procedure.
Abbas Shobeiri S, Garely AD, Chesson RR, Nolan TE.
Obstet Gynecol. 2002 Jun;99(6):1067-72.
PMID: 12052601 [PubMed - indexed for MEDLINE]
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Paravaginal repair of lateral vaginal wall defects by fixation to the ischial periosteum and obturator membrane.
Scotti RJ, Garely AD, Greston WM, Flora RF, Olson TR.
Am J Obstet Gynecol. 1998 Dec;179(6 Pt 1):1436-45.
PMID: 9855578 [PubMed - indexed for MEDLINE]

Surgical landmarks of the ureter in the cadaveric female pelvis.
Barksdale PA, Brody SP, Garely AD, Elkins TE, Nolan TE, Gasser RF.
Clin Anat. 1997;10(5):324-7.
PMID: 9283730 [PubMed - indexed for MEDLINE]

Book Chapters

Garely AD, Krieger BR, Ky AJ. Rectal Prolapse, Current Surgical Therapy, 2014, 11th Edition, Eds. JL Cameron and AM Cameron

Garely AD, Olivera C. Minimally invasive surgery for urinary incontinence. Chapter 12, Operative Gynecologic Laparoscopy: Principles and Techniques, 2008, Eds. F Nezhat and C Nezhat

Garely AD, Kaufman L. Transabdominal procedures for the treatment of stress urinary incontinence. Chapter 8, Female Pelvic Health, 2002, Eds. Carlin and FC Leong

Elkins TE, **Garely AD**. Repair of vesicovaginal, urethrovaginal and ureterovaginal fistulas. Section XV. Gynecologic Surgery. 1995. Eds. T. Stoval and W. Mann

I am the author of the section on "vesicovaginal fistula" for the online journal "Uptodate".

My first experience with mesh used to treat pelvic floor defects was in 1998, when I trained on the Gynecare TVT sling, at the Karolinska Institutet, in Sweden. After returning from Sweden, I did one of the first TVT operations in the United States. I was an active preceptor and proctor on the procedure until 2002. From 2003-2004, I was involved in the teaching and preceptoring of the IVS tunneler, used to treat apical vaginal prolapse. After 15 cases with this device, I abandoned its use secondary to a high rate of mesh erosions and failures. Over the past 15 years, I have done consulting work for Gynecare, US Surgical/Tyco, Covidien, Caldera, AMS, and C.R. Bard, Inc. I have done numerous cadaver and didactic teaching labs, mostly as a proctor. I have never used any transvaginal mesh products for the treatment of vaginal prolapse

except for the IVS Tunneler. After my experience with the IVS Tunneler, I did not believe it was a safe operation.

I have reviewed numerous Instructions for Use (IFU) for a variety of medical products including mesh products in order to understand the proper way to use the device and to gain knowledge about the complications and adverse events associated with the devices.

I have extensive clinical experience with IFUs and instructing patients about the adverse events and risks contained in IFUs. I have gained expertise in IFUs through my extensive clinical experience reviewing IFUs and consenting patients regarding IFUs.

I have significant experience with pelvic repair surgery.

I have personally examined, diagnosed and treated over a hundred patients with mesh complications.

II. OPINIONS

I hold all of my opinions set forth in this report to a reasonable degree of medical certainty.

A. Ethicon disregarded governmental requirements in bringing the Prolift kits to market.

For over three years, Ethicon marketed and sold the Prolift kits (Prolift Anterior, Prolift Posterior, and Prolift Total, each of which represents both an Ethicon-marketed product and an Ethicon-marketed procedure), by bringing these products to market without FDA 510(k) clearance.

B. Ethicon withdrew the Prolift kits from the market rather than conduct safety and efficacy studies.

In 2011, the FDA assessed the safety and efficacy of Prolift as well as other pelvic organ prolapse products available at the time, concluding that safety and efficacy had in fact not been shown. After the FDA made this determination, Ethicon withdrew their Prolift products from the market, as opposed to conducting FDA-required clinical trials designed to assess the safety and effectiveness of the products. However, Ethicon internal documents and Ethicon-sponsored trials show that the safety risks associated with the Prolift kits exceeded any perceived benefit.

C. The Prolift is defectively designed.

I have provided consultation services to medical device manufacturers for the development of pelvic mesh implants, and I am familiar with the process involved in designing a product intended for permanent surgical implantation in the human body. During this design process, the manufacturer of the surgical device must compare the known risks against the known benefits of the device‟s design as well as consider all information known to the manufacturer that may bear on the safety and efficacy of the design, including the gravity, severity, likelihood, and avoidance of the dangers associated with that design. In addition to making these assessments, the manufacturer must also weigh the known benefits against the known risks and determine that the device‟s design has an acceptable risk profile.

The risk profile of the Prolift systems is unacceptable, as the surgery is an elective procedure that has the potential to cause serious life-altering, complications. For this reason, Ethicon, by its own admission, should not have launched the Prolift kits, with the company itself recognizing that "Pelvic organ prolapse is a functional disorder, not a life threatening disease. 1. Abstention is always a possibility. 2. Whatever the treatment, it must not create serious complications."[1]

Ethicon"s corporate documents show that the company"s consulting physicians had raised concerns about the safety profile of the Prolift. For example, around the time Ethicon launched the Prolift, Dr. Linda Cardozo, an Ethicon Prolift advisor, wrote the company to state: "I thought I would just let you know that I find the safety profile quite worrying and hope that this will be discussed in some detail especially in view of the fact that we have no efficacy data to review. It is not that there were a lot of complications, its severity and type of complications and these were just the peri operative ones! I still have major concerns regarding the erosion rate and possible problems with dyspareunia and none of these have been addressed in the data which we have been given to date."[2]

Ethicon"s European clinical trial failed to meet the internally determined criterion for successful prolapse treatment. In addition, Ethicon-sponsored clinical trials on Prolift and the mesh component in Prolift by Ethicon"s consulting physicians resulted in high rates of serious complications caused by the product.[3] This clinical information reflects the Prolift"s unacceptable risk/benefit profile, which should have prevented Ethicon from bringing the product to market, or should have caused the company to withdraw the kits far sooner than it did.

The risks inherent in the designs of the Prolift kits outweigh their benefits for a number of reasons including, but not limited to, the following:

1. The polypropylene material used in the manufacture of the Gynemesh PS (Prolene Soft) mesh used in the Prolift kits was known to cause an intense and chronic foreign body reaction and chronic inflammation, and was predisposed to shrinkage and contraction.[4]

2. The Prolift kits were implanted transvaginally, which means the mesh went through the vagina. Bacteria in the vagina can attach to the mesh, where the bacteria can proliferate, potentially leading to abscesses, fistulae, and infections.[5]

3. The pores of the Gynemesh PS mesh used in the Prolift kits were not adequate in size to allow for proper tissue ingrowth, resulting in excessive fibrotic bridging, scarification, and mesh contraction, which can in turn cause erosion, vaginal or pelvic floor deformation, nerve damage, and chronic or permanent pain. Ethicon"s documents show that the majority of measured pores in the Gynemesh PS mesh used in the Prolift kit were significantly smaller than the 1 mm pore size recognized in literature and in Ethicon"s documents as the minimum necessary for appropriate tissue response.[6] According to Ethicon"s own internal definition, the Gynemesh PS used in the Prolift kit was not a "lightweight" or "large pore" mesh.[7]

4. The Gynemesh PS mesh in the Prolift kits was not designed for, nor determined to be safe for, use in the female pelvis. Gynemesh PS, which was originally designed for use in abdominal wall hernias and was marketed under the name Prolene Soft, results in a serious biomechanical mismatch between the implant and the pelvic tissues. This mismatch should come as no surprise considering that prior to launching the Prolift kits, Ethicon did not determine, nor even attempt to determine, basic properties of the pelvic tissues that would be in permanent contact with the mesh.[8] In the years during and after development of the Prolift kits, Ethicon corporate documents repeatedly comment on this lack of information about basic forces and properties of the female pelvic floor.[9] For example, one internal memo dated prior to the launch of Prolift noted that the "in vivo forces and exerted strains on pelvic floor repair during the postoperative period" were not known.[10]

Corporate documents generated after the launch of Prolift similarly reflect a lack of information about the compatibility of mesh with the female pelvis.[11] One internal email from August 2006 noted the company"s lack of data on the "physical and morphological outcome following vaginal implantation,"[12] and a 2007 report showing minutes from an Ethicon meeting

of experts specifically stated: "Need to learn more about special anatomic features in vaginal region."[13] This report went on to note that the vagina is completely different from the abdominal wall.[14] The Ethicon corporate documents also reflect that the company did not design the Prolift kits or any other pelvic implant specifically to meet the mechanical properties of the female pelvic floor.[15]

The biomechanical incompatibility of the Gynemesh PS with the female pelvis, which Ethicon failed to study or establish before selling the product, was also demonstrated in a published study involving the vaginal implantation of three types of mesh in monkeys. This study showed that Gynemesh PS "had the greatest negative impact on vaginal histomorphology and composition," and that tissue injury "was highest with Gynemesh PS."[16] This study's authors stated that their results "showed that following implantation with the stiffer mesh, Gynemesh PS, the vagina demonstrated evidence of a maladaptive remodeling response." The authors also went on to report: "These findings are consistent with our previous study which showed that the tissue mechanical properties of the underlying and associated grafted vagina deteriorated following implantation with the stiffer mesh Gynemesh PS but not the lower stiffness meshes [in the study]. The cause for the tissue degeneration was found to be in large part related to mesh stiffness. In a previous study, we showed that the stiffness of a mesh is intrinsically related to its weight, pore size and porosity. Thus, it is likely that under physiologic loading conditions, a heavier weight, less porous, stiffer mesh will have a more negative impact on the underlying and newly incorporated vagina due to a maladaptive remodeling response induced in part by stress-shielding."[17]

5. The mesh in the Prolift kits is too stiff for its intended application. The pelvic floor needs to be supple and flexible to perform its many functions, and to accommodate

movement and forces associated with activities of daily living, including urinary and bowel function. The bladder and the rectum need to be able to expand, which allows for the normal storage and elimination of urine and feces. These functions are diminished with a loss of compliance (the ability to expand). However, polypropylene mesh placed transvaginally is stiffer and less flexible than the native tissues in the vagina. Scar plate formation and mesh stiffness are also incompatible with the natural functioning of the vagina. Literature on hernia mesh has reported that mesh can cause "considerable restriction of abdominal wall mobility" and that "rigidity and discomfort, especially at the edge of the mesh are frequently reported complaints."[18] In light of published literature establishing that mesh can be or become rigid and restrictive, Ethicon should not have used this material in the vagina, which has much greater sensitivity and requires far greater flexibility than the abdomen. The fibrotic scar that encapsulates the mesh used in the Prolift implant due to its defective design features causes greater rigidity, less flexibility, and pain.

6. As the Prolift mesh scars in, the resulting shrinkage or contracture of the tissues surrounding the mesh can entrap nerves, deform the vagina and pelvic anatomy, and result in severe, permanent and difficult-to-treat or untreatable pain as a result of the chronic inflammatory response and fibrosis.[19]

Ethicon"s documents reflect the potential for the serious complication of mesh-related nerve entrapment. For example, internal notes from a 2003 Ethicon Surgeon Panel meeting specifically addresses "Nerve entrapment with chronic pain," stating, "Persistent chronic pain from foreign body reaction – greater fibrosis greater complaints – Scar plate with nerve entrapment – sometimes after one year there are no complaints and then complaints happen – often the result of tiny nerves in the granuloma not just a matter of not damaging the major

nerves such as N ilioinguinalis or R genitalis - even if you care for the big nerves you can't prevent pain."[20] A 2008 internal Ethicon PowerPoint presentation stated the following in regards to mesh-related pain: "The tissue reaction at the mesh implant is like a chronic wound, present for years and years after the implantation…studies of explanted meshes [show] nerve fibers and fascicles in the interface of the mesh…The nerve structures are irritated by the inflammation and cause sensation of pain."[21]

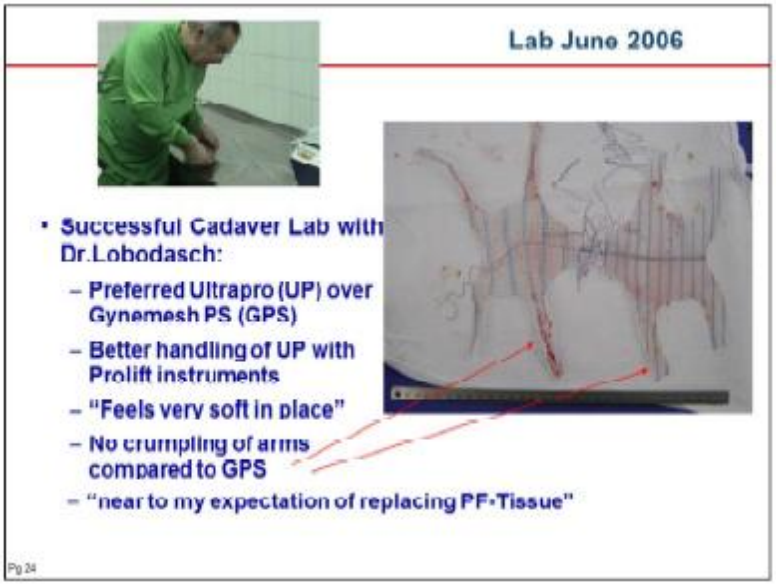
7. The mesh arms of the Prolift kits damage tissue, cause pain, and exacerbate inflammation and shrinkage. These mesh arms are placed through a tunnel that is created by a rounded trocar smaller than the width of the mesh.

As the parts of the mesh arms of Prolift kits incorporate into tissue, via a scarring process, they pull asymmetrically on the center mesh portion, causing it to move and/or to change shape in unintended and unpredictable ways. This center portion of the implant is intended to remain flat between the bladder and the vagina and/or between the rectum and the vagina. The arms pulling on and deforming the central mesh from their anchoring points in the pelvic sidewall muscles also causes pain during daily activities which necessarily exert forces on the pelvic muscles and tissues. For example, sexual penetration or attempts at defecation and urination push on the mesh, aggravating the pulling of the arms, which in turn causes new or worsening pain.

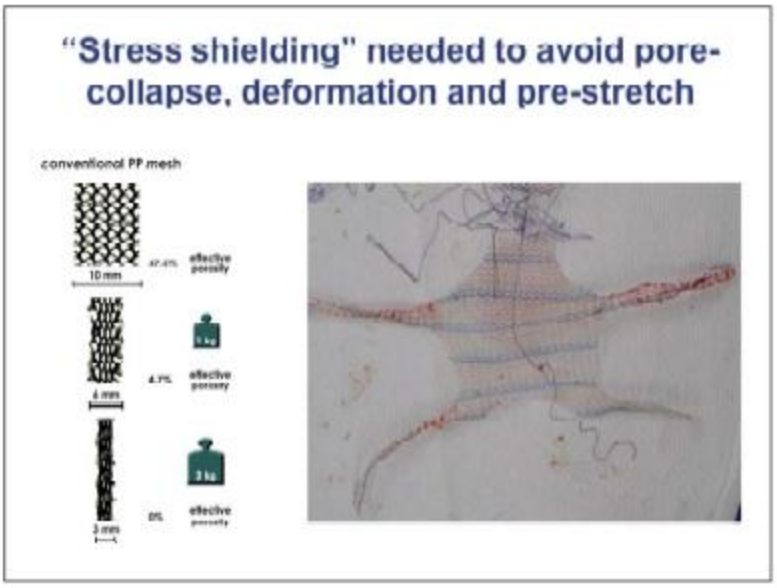
The excessive scarification and shrinkage of the arms is caused by or made worse by the trocar-based insertion, which causes them to deform during implantation by folding, curling, and/or rolling into the shape of the trocar tunnels. The deformation of the mesh arms that occurs both during and after implantation impedes tissue incorporation of the material and contributes to the excessive inflammation, fibrotic reaction, scarring, contraction, and chronic pain.

In 2006, Ethicon conducted cadaver labs in which an Ethicon consultant demonstrated that the Prolift mesh arms deform (or "crumple") upon implantation.[22] These labs also produced photographic evidence of arm deformation with Prolift arms that were later included in several of Ethicon"s intemal documents explaining this phenomenon, as set forth below:

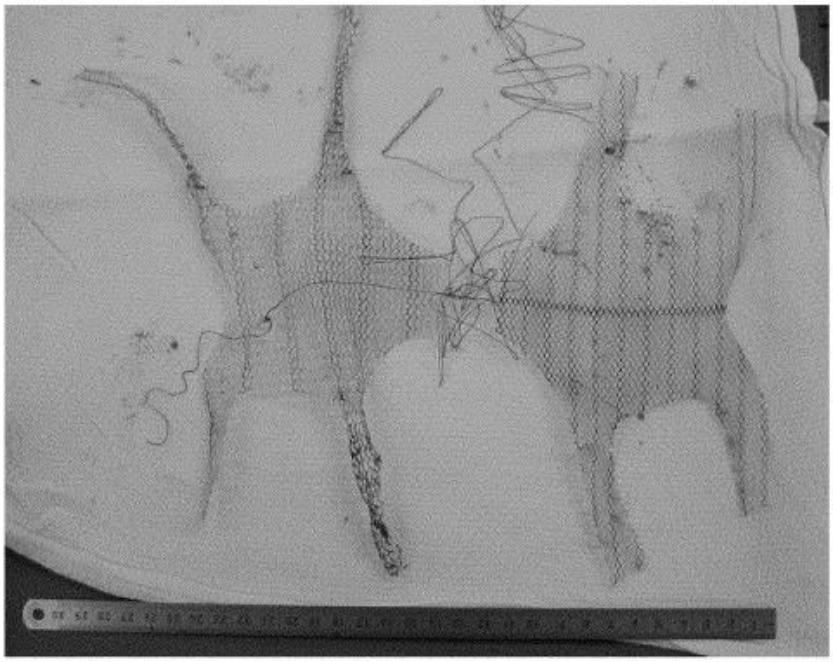
- ETH.MESH.05237919 (3/25/09 internal PowerPoint), p. 24, showing explanted Prolift mesh from June 2006 cadaver lab:

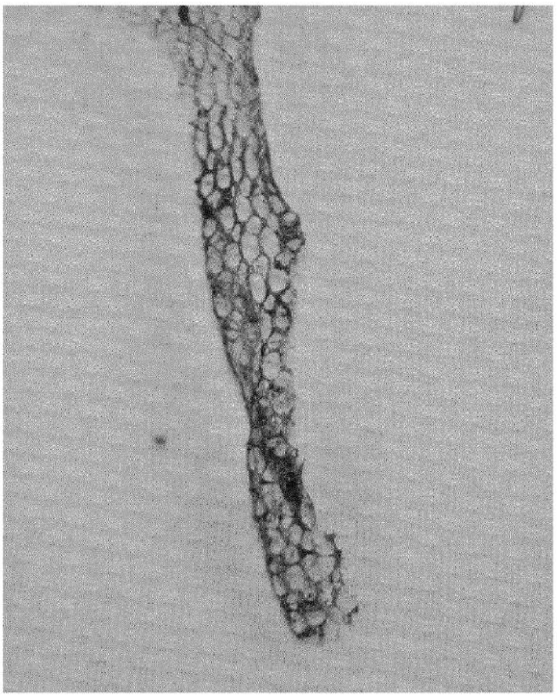


- ETH.MESH.02227282 (11/14/09 internal PowerPoint), Slide 6 – Photograph of explanted Prolift mesh showing deformation of arms:

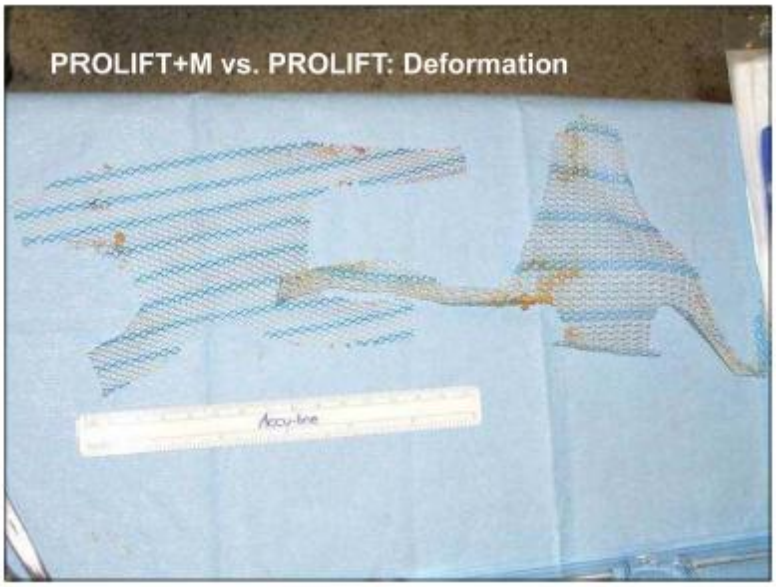


- ETH.MESH.05454207 (8/1/06 internal e-mail with photos from cadaver lab showing deformation ("crumpling") of Gynemesh PS arms):





- ETH.MESH.05237872 (5/27/11 PowerPoint – photos of Prolift with deformed arms):



8. The blind passage of the metal trocars during implantation presents the unnecessary risk of tissue damage, vascular damage, nerve damage, and internal trauma in the hands of many gynecological and urological surgeons.[23]

9. The Prolift systems are defective in that they require insertion and permanent placement of a foreign material such as polypropylene completely through innervated muscles using curved trocars (needles) and sleeves. The arms puncture and pass through several sets of important muscles; this induces muscle pain and may damage nerves. It creates abnormal anatomical stress on the vagina and within the pelvis. The abnormal stresses combine with the known mesh contraction to pull on the side walls. Pulling on muscles causes pain.

10. Attempting explantation of any part of the Prolift mesh implant is traumatic to the patient and is a difficult surgery to perform. Additionally, it is often impossible to remove all of an armed implant such as Prolift. There is no evidence that Ethicon attempted to determine an appropriate course of action in the event the Prolift mesh required removal due to complications, and it provided no instruction or direction regarding how to perform a removal surgery.

Surgery to attempt to remove the mesh increases the presence of scar tissue, which can create or contribute to the patient"s pelvic pain, dyspareunia and deformation and abnormal function of the pelvic area. Because the mesh cannot be fully removed, patients who have experienced complications often continue to suffer complications, including pain, even after undergoing one or more removal surgeries.

11. The curved arms of the Prolift posterior is a defect. Any traction at all on these arms causes then to roll and curl. Prolift was the only prolapse mesh kit with arms that curve. The arms rolling and curling insures that they will not scar in uniformly and will tend to become encapsulated by scar.

E. Clinical trials demonstrated to Ethicon that armed transvaginal mesh (TVM), such as the Prolift implants, do not result in superior functional outcomes.

I have participated in clinical studies and I have also advised on the design of clinical trials. Based upon the current literature regarding armed TVM kits and the articles and abstracts regarding the Prolift mesh implants, based upon what I have observed when I have removed Prolift mesh implants, and based upon what I have learned from my review of Ethicon's internal documents and testimony, it is my opinion that the risks of implanting the Prolift far outweighed any benefits, with unacceptable rates of mesh exposures, erosions, dyspareunia, chronic or permanent pelvic pain, painful mesh shrinkage, revisions and re-operations in an attempt to address these complications, and reoccurrences of prolapse following mesh removal surgeries.

Review of relevant literature on the matter of armed TVM demonstrates that patients are not more satisfied with armed mesh than they are with traditional repairs. Also, in studies comparing the anatomical success of armed TVM with traditional repairs, the authors define the parameters of a successful repair differently.

When the definition of successful prolapse repair surgery includes consideration of both anatomic and of functional outcomes, it is evident that the risk of armed TVM surgery is greater than the benefit. One of the unnecessary risks associated with the Prolift kit is the patient's risk of undergoing multiple surgical procedures aimed at treating mesh-related complications that often cannot be alleviated. As stated in a published article, "[t]ransvaginal mesh has a higher re-operation rate than native tissue repair" due to the rate of surgeries for attempted repair of complications.[24] Published literature reflects that there is no functional nor anatomic benefit for armed TVM in the posterior compartment.[25]

Polypropylene TVM, by some definitions, may offer improved anatomical outcomes when compared to anterior colporrhaphy. However, repairs that meet strictly anatomical success factors do not equate to improved functional outcomes nor to lower rates of reoperation for prolapse. TVM mesh procedures are also specifically associated with increased morbidity, mesh extrusion, and higher reoperation rates.[26] For example, one study comparing vaginal prolapse repair with and without mesh showed there was no difference in anatomic benefit at three years and that there was a 15% mesh exposure rate after just three months.[27]

In November, 2006, the French National Authority for Health (HAS) issued its report entitled "Evaluation of Mesh Implants Installed Through the Vaginal Approach in the Treatment of Genital Prolapse."[28] The evaluation was founded on a critical analysis of literature. A group of experts concluded that, given the variety of types of tested implants and treated indications, the amount of follow-up observation that rarely exceeded 2 years, the absence of comparative studies with alternative techniques in the majority of cases, and the uses of imprecise standards of evaluation, the data in the literature did not allow an effective evaluation of the anatomical and functional viability of implants in the treatment of prolapse through the vaginal approach. Some complications, several very serious, were identified.

The published literature is consistent with Ethicon‟s own sponsored clinical studies. An Ethicon-sponsored clinical study for the Gynemesh PS implanted transvaginally for pelvic organ prolapse repair, intended to serve as clinical support for the Prolift device, failed the company‟s own stated criteria of success (defined as a prolapse recurrence rate of less than 20%).[29] This study also reflected a 75.6% adverse event rate, a "serious" adverse event rate of 25.6%, a 10% "severe" adverse event rate, a 50% rate of adverse event requiring treatment, and a mesh-related adverse event rate of 66.7%.[30] This study was performed by physicians who helped develop the

Prolift device (B. Jacquetin and M. Cosson), and demonstrated to Ethicon that the mesh was not an effective prolapse treatment (according to Ethicon"s own criteria) and presented unreasonable risks, and should have prevented the product from being marketed. At a minimum, this information should have been clearly and adequately conveyed to physicians so that they could assess this information for themselves and with their patients. Not only did Ethicon not take any corrective action based on the results of this study, it indicated its intent to "differentiate" the study results,[31] and failed to adequately provide any warning or information to physicians about the results of this study.

A nearly identical study was conducted approximately the same time frame in the United States, which also demonstrated significant complication rates.[32] While the U.S. study was reported to have satisfied Ethicon"s criteria for "success," it nonetheless showed that 65.9% of patients suffered at least one adverse event, and that 44.7% of patients suffered an adverse event that was either device-related or procedure-related. It is also noteworthy that the failure rate at 12 months was 12% with a 90% confidence interval of 6.7-19.6%. Success for the study was defined as the upper 90% two-tailed confidence interval not exceeding 20%, which would signify a prolapse recurrence rate of less than 20%. With an overall confidence interval number of 19.6%, the study met Ethicon"s arbitrary internal criteria for "success".[33] The study report further analyzed the internal "success" rates for three separate groups of patients: anterior repair only; posterior repair only; and both anterior/posterior repair.[34] For both the anterior repair group and anterior/posterior repair group, the study results failed to satisfy Ethicon"s own internal criteria for "success."[35] Particularly in light of the French study, these study results should have caused Ethicon to take corrective action, and doctors at least should have been

warned about the overall complication rates and that this study showed the device was a failure for two of the three groups of patients in the study under Ethicon‟s own criteria.

In a 2005-2006 Prolift clinical study conducted by the same physicians who participated in the development of Prolift and who conducted the earlier Gynemesh PS study, 14% of patients suffered mesh exposure, 19.6% suffered "painful mesh shrinkage," and the objective success rate was only 75.7% - and these were only the 18-month follow-up results.[36] These clinical study results further demonstrated that the risks of this product outweighed any potential benefit.

Based upon the current literature regarding armed TVM kits and the articles and abstracts regarding the Gynemesh PS and Prolift products, upon what I have observed when I have removed Prolift mesh, and upon what I have learned from my review of Ethicon‟s internal documents and testimony, it is my opinion that the risks of implanting the Prolift far outweighed any perceived benefits, with unacceptable rates of mesh exposures, erosions, dyspareunia, chronic or permanent pelvic pain, painful mesh shrinkage, revisions and re-operations in an attempt to address these complications, and reoccurrences of prolapse following mesh removal surgeries.

F. Ethicon failed to provide adequate information about potential contradindications of the Prolift kits in certain patient populations.

A medical device manufacturer which knows or believes that its devices cannot be safely used in any segment of its patient population must make reasonable efforts to warn and instruct its consumers regarding a restriction for those patients. According to the Prolift IFU, the only restricted patient populations for the Prolift were infants, children, women who are pregnant or may become pregnant, or who may have infection or cancer. This implied to physicians that the use of the Prolift device in other patients, such as women who were sexually active but would

not become pregnant, smokers, diabetics, prescription steroid users, fibromyalgia patients or patients with pre-existing pelvic pain, was medically justified. If Ethicon knew or believed that there may be risks specifically associated with the use of its Prolift products in any given category of patients, it was obligated to so advise the physician users of the products. In addition, none of the Prolift IFUs contain any discussion of long-term sequelae of complications such as multiple surgeries or the potential difficulty or impossibility to remove all mesh or to treat complications.

G. Ethicon knew about problems inherent to the Prolift kits and failed to warn physicians and patients of those problems.

I have reviewed and am familiar with the Prolift Instructions for Use (IFU), physician training materials, and marketing materials prepared by Ethicon. As a urogynecologist and pelvic reconstructive surgeon with experience in both implanting and explanting pelvic mesh products, I have encountered and reviewed the IFUs for a number of products other than the Prolift.

The Instructions for Use pamphlet is among the materials upon which physicians reasonably rely in order to make informed decisions about whether to use and how to use a medical device. Any IFUs contents should assist the physician in his or her risk-benefit analysis conducted when determining whether to recommend a particular product as a surgical option to a patient.

Beyond the IFU, physicians also rely on other information provided by medical device manufacturers, such as patient brochures, physician training materials, and direct communications with sales and marketing personnel or other company employees. In order to make an informed decision as to whether to use a particular product in a given patient, a

reasonable physician expects medical device sellers to provide all appropriate information known to the company that could impact that decision. A company‟s failure to disclose to a physician information relating to the potential safety of a product not only prevents the physician from being able to make an informed decision about the product. It also prevents the physician from properly counseling patients considering whether to agree to implantation of the medical device.

In making an informed decision of whether or not to use a medical implant, the physician must be warned not only of the potential adverse events that may be associated with the product, but also of the frequency, severity, duration and potential permanence of adverse events. If a medical device manufacturer knows that the design features of its product cause or increase the risk of a complication, or present a risk unique to that product‟s design, then it would be misleading and inadequate for that manufacturer to represent to users of the device that the risks associated with that product "are those typically associated with surgically implantable materials," as stated in the IFU for the Prolift. Likewise, if a manufacturer knows that a complication can be chronic, severe or permanent, it should provide that information to those using its products.

In its IFU as well as its training and marketing materials, Ethicon made misleading representations to physicians that were contrary to its own internal documents which showed information known to or, at a minimum, available to Ethicon. The "Description" and "Performance" sections of the Prolift IFU contain such statements. For example, one section includes a statement that the material used in the mesh is "nonreactive" and that "[a]nimal studies show that implantation of Gynecare Gynemesh PS mesh elicits a minimum to slight inflammatory reaction, which is transient…" Contrary to these statements, however, Ethicon‟s

corporate documents reveal that the polypropylene material used in the Gynemesh PS was known to cause an "excessive" and "chronic" foreign body reaction and "intense" and "chronic" inflammation.[37]

The statements in the IFU that the material will "retain its strength indefinitely in clinical use," that the "mesh has excellent strength," and that "[t]he [Gynemesh PS] remains soft and pliable and wound healing is not noticeably impaired" are also contrary to Ethicon"s intemal documents, which show the material was known to be stiff and inflexible, was "over-engineered," and too strong for the pelvis. [38]

Statements in the IFU that "[t]he material [in the Gynemesh] is not absorbed, nor is it subject to degradation or weakening by the action of tissue enzymes" are also contradicted by Ethicon"s intemal documents and reports which clearly show that the material was subject to degradation inside the body.[39]

In its Patient Information Brochure for the Prolift kits, Ethicon claimed that "[Prolift] allows for the restoration of sexual function by restoring vaginal anatomy," a claim which is contrary to data from its own studies and to information from a number of sources, including one of the company"s own medical directors.[40]

The IFU statement that "[t]he bi-directional elastic property [of the mesh] allows adaptation to various stresses encountered in the body," is also misleading. Ethicon never conducted testing nor studies to determine the "various stresses encountered in the [female pelvis]," so there is no factual basis for any such statement. Also, as discussed above, Ethicon"s internal documents demonstrate that the mesh was too strong, was "over-engineered," and was too stiff and inflexible for use in the female pelvis.

Ethicon failed to warn physicians and patients about the risks associated with the Prolift, and failed to properly warn of the frequency, severity and duration of the risks that Ethicon did disclose. The omission of the instructions and/or warnings as set forth below rendered the Prolift not reasonably safe:

1. The polypropylene used in the Prolift implants causes intense, chronic, and excessive inflammation and foreign body reaction, and is prone to degradation in-vivo.

2. The minimum pore size of mesh, after implantation and under physiologic stress, must be 1mm or larger in order to promote tissue ingrowth and reduce scar plate formation and "mesh shrinkage."[41] Many of the pores in the Gynemesh PS mesh are significantly less than 1mm in size,[42] and Ethicon never warned any patient or doctor about the increased risks inherent to this aspect of the product"s design. Furthermore, Ethicon made representations in its Prolift IFU that Gynemesh PS had "sufficient porosity for necessary tissue ingrowth," and represented in its marketing materials that Gynemesh PS had "Large pore size [which] fosters tissue incorporation."[43]

3. The pores of the Gynemesh PS mesh will vary in shape and in size when subjected to even slight amounts of pressure.[44]

4. One Prolift clinical study showed that the Prolift kits are not well suited for patients suffering from stage one or stage two prolapse, and that the kits are "better suited" for those with more severe stages of prolapse.[45] Despite being supplied this information by the director of the study, who also happened to be one of the inventors of the Prolift kits, Ethicon never provided any such warning or information to doctors nor indicated in the labeling any limitation on the use of the Prolift kits relative to the grade or severity of prolapse.

5. Ethicon"s corporate documents contain information about the risks of shrinkage and scar plate formation inherent to polypropylene meshes. In fact, one internal Ethicon presentation noted that some of the "[i]ssues with polypropylene mesh" are "Scar Plate Formation," "Stiffness," and "„Shrinkage" 20-40%." [46] Although Ethicon"s corporate documents reflect that the amount of contraction or shrinkage associated with its polypropylene mesh implants was at least as high as 20% to 40%, and that this contracture is associated with deformation of the mesh and the tissues which can lead to chronic and unremitting pain, no warning has ever been provided by Ethicon about the frequency or severity of this increased risk.[47]

6. Between 2005 and 2009, Ethicon failed to warn doctors and patients of the risk of painful sexual intercourse (dyspareunia), mesh shrinkage, and that Prolift can cause pain that is chronic or permanent. Ethicon also never conveyed any warning related to "painful mesh shrinkage," despite the fact that in 2005 the inventors of Prolift conducted a study which resulted in 19.6% of patients in the study suffering "painful mesh shrinkage."[48]

In 2009, the IFU was amended to add an additional reference to "pelvic pain or pain with intercourse," but again contained limiting language that these complications "are those typically associated with pelvic organ prolapse repair procedures." The limiting nature of the added language renders the warning essentially meaningless to doctors and to patients. This language would suggest that the potential for pain is no greater than with any other pelvic organ prolapse procedure, including traditional repair (without mesh) or sacrocolpopexy. Ethicon"s internal documents reflect that the pain experienced by Prolift (and Gynemesh PS) patients was specifically associated with the mesh, and thus is fundamentally distinct from the types of pain that may be "associated with pelvic organ prolapse repair procedures."

7. In 2005, Ethicon's European Medical Director, Axel Arnaud, urged Ethicon to include the following warning in the Prolift IFU: "WARNING: Early clinical experience has shown that the use of mesh through a vaginal approach can occasionally/ uncommonly lead to complications such as vaginal erosion and retraction which can result in anatomical distortion of the vaginal cavity that can interfere with sexual intercourse. Clinical data suggest the risk of such a complication is increased in case of associated hysterectomy. This must be taken in consideration when the procedure is planned in a sexually active woman."[49] No such warning was ever added to the Prolift IFU, and no warning addressing these recognized risks of anatomical distortion, interference with sexual intercourse, increased risk for hysterectomy, and avoidance of use in sexually active women was ever provided by Ethicon to doctors or patients.

8. Prior to October 1, 2009, Ethicon failed to warn physicians that the surgeons who invented Prolift conducted a clinical study using prototypes of the Prolift device, and despite the intent for the study to show support for the product and the procedure, the results in fact failed to meet the company's own criterion for success, which was defined as a prolapse recurrence rate of less than 20%.[50] Although this information about the adverse outcome of the study was available to Ethicon as early as June 2006, Ethicon failed to disclose this information in the IFU until 2009. A revised IFU for the Prolift kits put into effect on October 1, 2009 contained a vague statement about the study's failure in the "Clinical Performance" Section, by noting of the study: "met pre-defined criteria of upper limit of 90% CI less than 20%...no."[51] This unclear reference did not adequately convey to doctors that this clinical study failed to meet Ethicon's definition of successful prolapse treatment.

Moreover, Ethicon failed to warn physicians that this clinical study showed: a 75.6% adverse event rate; a 25.6% serious adverse event rate; a 10% "severe" adverse event rate; a 50%

rate of adverse events requiring treatment; and a 66.7% mesh-related adverse event rate.[52] Ethicon never warned doctors of these complication rates, nor of the severity of these risks.

9. Pelvic mesh causes serious complications which, in some cases, cannot be corrected. In a November 2008 PowerPoint, Ethicon's Medical Director, Piet Hinoul, urged the company to "Inform! Mesh is permanent. Some complications may require additional surgery that may or may not correct the complication. Potential for serious complications and their effect on quality of life: pain during intercourse, scarring, narrowing of the vaginal wall."[53] Ethicon never conveyed any such warning to doctors or to patients advising of these risks.

10. Prior to October 2009, Ethicon failed to provide a warning addressing risks of nerve damage, nerve entrapment, nerve tethering, and/or nerve severing caused by the Prolift mesh implants.[54] In an amended version of the Prolift kits' IFU released by Ethicon in October 2009, the company included a generic list of adverse events, including "nerve damage," but the company also prefaced the warning with the limiting language that "Potential adverse reactions are those typically associated with surgery employing implantable materials of this type…." This warning is inadequate and gives neither physicians nor their patients an indication that the Prolift mesh implant itself can damage, entrap, tether or sever nerves, and that this nerve damage can be difficult to treat or manage and that the complication may be permanent.

11. The Prolift implant arms cause tissue damage during implantation.[55]

12. Ethicon failed to warn physicians and patients that the mesh arms on the Prolift would inevitably deform during and after implantation, which can inhibit proper tissue response and can cause or exacerbate pain, and can lead to painful mesh arm scarification (or "banding").[56] Ethicon's Medical Director acknowledged that other than a generic reference to

"pain," the specific risks of painful shrinkage, scarification and contraction of the mesh arms were not included in any warning.[57]

13. Ethicon failed to adequately warn that the use of trocars inserted blindly through and into muscle and other tissue created the risks of tissue injury and potentially permanent nerve damage and pain.

14. Prior to October 1, 2009, Ethicon failed to provide any warning of the risks of voiding dysfunction, de novo incontinence, urinary tract infection or urinary obstruction or retention, following Prolift implantation.[58]

15. It is extremely difficult to remove the Prolift mesh in its entirety once implanted, and even to remove parts of the mesh requires invasive surgery that few surgeons are qualified and able to properly perform. Ethicon failed to warn about this risk, and failed to provide any instruction or direction as to how to address complications, or what to do in the event mesh removal was necessary.

In conclusion, as a surgeon who has read and relied upon IFUs for surgically implantable urogynecologic medical devices used in the operating room over the past 20 years, it is my opinion that the type of information detailed above should be communicated to surgeons so that they can make safe treatment choices for their patients. The company also should have updated the IFU in a timely manner as new information became available. If physicians are not fully and timely informed of all of the information known to the manufacturer bearing on the safety and efficacy of the product, they cannot be expected to perform an adequate risk-benefit analysis nor to obtain adequate informed consent from their patients.

H. Ethicon had at its disposal a number of safer feasible alternative designs that could have been utilized instead of the Prolift kits.

Aside from the use of native tissue repairs, or non-surgical pelvic organ prolapse treatments like Kegel exercises and pessaries, there were several alternatives to the design of the Prolift kits that would have been safer and just as effective if not more effective. Some of these alternatives include, but are not limited to: elimination of the mesh arms; elimination of the armed, blind trocar implantation design; possible use of alternative materials, such as biologic materials or polyvinylidene fluoride (PVDF/Pronova), which Ethicon recognized as safer than polypropylene. Ethicon has developed and/or sold products that contain some or all of these safer design components and/or characteristics, leaving no question that it was feasible for Ethicon to develop a safer design.

I. My Relationship with Ethicon

My personal experience with Ethicon began in 1999, when I became a consultant. I was sent to Sweden with a team of experienced surgeons to evaluate the TVT sling for the treatment of stress urinary incontinence. After I returned to New York, I became one of the first surgeons in the country to begin implanting the TVT sling.

Along with members from the trip to Sweden, I began teaching the TVT sling to gynecologic and urologic surgeons from around the country. These teaching events also included hosting surgeons in my own operating room and traveling to various conferences on behalf of Ethicon. I was frequently a paid consultant in the Ethicon industry sponsored booth at many

gynecologic and urogynecologic meetings. I gave lectures on the TVT at Ethicon sponsored events.

Prior to the launch of the Gynecare transvaginal mesh, I was asked to evaluate the product. It was my opinion at the time that based on what I experienced and observed from implants with the US Surgical IVS tunneler, and with my own use of Prolene tranvaginal mesh, that the Gynecare transvaginal mesh procedure would not be safe, either with respect to post-operative mesh complications, or to intraoperative injuries. I was given no clinical data to prove its efficacy. I did not believe the procedure could be taught to mainstream gynecology or urology surgeons without encountering a large number of complications. I expressed this opinion to Ethicon medical and corporate directors. I was promptly dropped from Ethicon as a consultant.

J. General causation opinions

I have personally observed and treated patients who have been implanted with Ethicon Prolift products that experienced the following device-related complications:

1. Chronic or permanent pelvic pain;
2. Chronic or permanent inflammation of tissue surrounding mesh;
3. Excessive scar plate formation, scar banding, and contracture of mesh arms, resulting in asymmetrical pulling on the central portion, causing pain;
4. Erosion of mesh into the bladder and rectum and exposure of mesh in the vagina;
5. Pudendal neuralgia;
6. Pelvic floor muscle spasm;
7. Direct trauma to organs and tissues and nerve injury and damage caused by the blind passage of trocars;

8. Direct trauma to tissue and nerves during implantation of the flat, uncovered mesh arms being pulled through smaller, round trocar tunnels;

9. Nerve damage or nerve entrapment as a result of mesh scarification and fibrotic bridging;

10. Dyspareunia;

11. Stress urinary incontinence and urge incontinence;

12. Urinary retention;

13. Constipation or fecal incontinence;

14. Deformed, wrinkled, folded, curled, roped and fragmented mesh upon removal;

15. Encapsulation of mesh (mesh covered in thick scar);

16. Vaginal shortening, tightening, stenosis and/or other deformation of the pelvic anatomy;

17. Infection as a result of the mesh, including bladder infections, vaginal infections, chronic urinary tract infections, and abscesses;

18. Fistulae; and,

19. Recurrence of prolapse (failure of treatment).

The published medical literature also reports these same types of complications with transvaginal pelvic organ prolapse repair implants.[59]

Based upon my education, training, experience and knowledge, and my familiarity with the published literature relating to this subject, it is my professional opinion to a reasonable degree of medical certainty that the injuries and complications that I have personally observed, diagnosed, and treated, with the Prolift are directly attributable to the defective design of these products as described previously.

III. DATA CONSIDERED IN FORMING MY OPINIONS

I considered the documents identified in the body and footnotes of this report, as well as those listed in Exhibit B attached hereto.

IV. EXHIBITS WHICH I PLAN TO USE AS A SUMMARY OF OR IN SUPPORT OF MY OPINIONS

I may use documents that I reviewed and which are identified above, female pelvic floor models and illustrations, samples of the Prolift, and summaries of literature that I may prepare.

V. COMPENSATION FOR MY REVIEW, STUDY AND TESTIMONY

I charge $1000 per hour for review and study of records. I charge a 50% premium on records that must be reviewed within 30 days.

Deposition and trial testimony is charged at $6,000/half day and $10,000/full day. Any work done in an 8 hour period is not billed with travel expenses. Outside of the 8 hours, travel time is billed at $250/hour.

VI. OTHER CASES IN WHICH I HAVE TESTIFIED AS AN EXPERT AT TRIAL OR BY DEPOSITION IN THE LAST FOUR YEARS

2015 – C.R. Bard MDL, Avaulta deposition

9/26/14- Idupuganti, deposition as explanting surgeon

2013- Miklos, deposition and trial testimony as defense witness. (Ga.)

2011 – McCarthy v. Karounas (Pa.) – trial testimony

Alan D. Garely, MD

CERTIFICATE OF SERVICE

I hereby certify that on February 1, 2016, I served the **PLAINTIFFS' RULE 26(a)(2)(B) EXPERT REPORT OF ALAN D. GARELY, M.D.** on the following counsel of record by electronic mail:

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[1] ETH.MESH.05574856 (9/23/03 PowerPoint), Slide 4 (Emphasis in original).

[2] ETH.MESH.02923305 (8/15/05 email from consulting physician about Prolift)

[3] ETH.MESH.00012009 (6/27/06 Clinical Study Report), p. 12061 and p. 12070 (Ethicon clinical study intended to support Prolift, showing failure of internal criteria for success, and showing *inter alia* 75.6% complication rate; 25.6% "serious" adverse event rate; 10% "severe" adverse event rate; 50% rate of adverse event requiring treatment; and a mesh-related adverse event rate of 66.7%); ETH.MESH.00821702 (9/26/07 internal memo reporting results of 2004 European clinical study of Prolift: 14% of patients suffered mesh exposure,19.6% suffered "painful mesh shrinkage," and the objective success rate was only 75.7% after only 18 months).

[4] ETH.MESH.02247342 (9/26/08 internal PowerPoint "The Journey from Prolift to Prolift +M") ("Shrinkage…The body‟s reaction to dense or heavyweight meshes results in intense inflammation & mesh shrinkage." "Polypropylene creates an intense inflammatory response…. The excessive inflammatory reaction to heavyweight Polypropylene tends to form a scar plate around the prosthetic that results in a firm and contracted mesh…."); ETH.MESH.13375497 (10/1/08 internal PowerPoint) – "Issues with Polypropylene Mesh • Excessive foreign body reaction • Chronic inflammation…• Scar plate formation • Stiffness…• „Shrinkage‟ 20-40%.").

[6] ETH.MESH.12873534 (10/25/13 internal e-mail "Poresize for Prolene Soft Mesh") (showing measurements of pores averaging .03, .04, .07, .10, .11, .12, .40, .44, .47, .54 mm^2; the average pore size across all measured pores < 1 mm^2). Not all pores were measured.

[7] ETH.MESH.05920616 (7/20/07 internal e-mail) ("Ethicon's definition of Lightweight is as follows: - Large pore size > than xx mm (varies from 1,5 mm - 5 mm)… We use this definition for all our meshes.").

[8] ETH.MESH.05643313 (12/1/00 internal e-mail); HMESH_ETH_00602957 (8/21/06 internal e-mail).

[9] ETH.MESH.02017154 (3/06/07 Minutes from an Ethicon Meeting) – "Need to learn more about special anatomic features in vaginal region" and noting that vagina is completely different from abdominal wall.); ETH.MESH.02141727 (5/09/08 internal PowerPoint) – "There is still NO evidence of a Device created specifically for the female pelvis." (p. 4); "Pelvic Floor materials are still over-engineered → we need less foreign body material → materials that correlate to measured female pelvic values." (p. 6).); ETH.MESH.02142351 (8/25/08 internal PowerPoint), p. 2 – "[New product design, which never went to market] will be the first PFR device designed specifically for the female pelvis.").

[10] ETH.MESH.03904451 (6/06/00 internal memo).

[11] ETH.MESH.02010834 (2/16/11 internal memo "Biomechanical consideration for Pelvic floor mesh design") – p. 2 ("The ideal mesh for prolapse repair which mimics precisely the biomechanical needs of the pelvic floor region has not been developed…. Pain and discomfort can result from stiff mesh that were originally designed for hernia surgery and „over-engineered" to exceed the burst strength of the abdominal wall at the cost of losing compliance [citing 2009 literature]…. [T]here is significant evidence that the complications associated with synthetic meshes can cause significant morbidity including infection, erosion, exposure, and pain [citing 2000 and 2007 literature]…. In addition, the vaginal tissue to be augmented in often structurally compromised, atrophic, and devascularized…. Moreover, there is evidence that meshes shrink in vivo leading to increased stiffness, pain, and poor restoration of the normal properties of the vagina compliance.").

[12] HMESH_ETH_00602957 (8/21/06 internal e-mail).

[13] ETH.MESH.02017154 (3/06/07 Minutes from an Ethicon Meeting).

[14] Id.

[15] ETH.MESH00751733 (10/22/09 internal PowerPoint), p. 7 – "There is no patient-centric PF material!"; "Different mechanical properties are needed in different area of PF."); ETH.MESH.02227282 (11/14/09 PowerPoint), Slide 3 – Chart showing burst strength of Gynemesh PS is more than 10 times stronger than the maximum intravaginal pressure from physical activity and "Until now, there is no patient-centric POP repair material!! Pelvic Floor Materials are still over-engineered – we need less foreign body material – materials that correlate to measured female pelvic physiological characteristics.").

[16] Liang, et al., Vaginal Degeneration Following Implantation of Synthetic Meshes with Increased Stiffness, BJOG. 2013 January: 120(2):233-243.

[17] Id.

[18]Junge, Elasticity of the anterior abdominal wall and impact for reparation of incisional hernias using mesh implants; Hernia 2001; 5: 113-118.

[19] ETH.MESH.05631478 (8/16/02 internal e-mail discussing article describing mesh-related nerve injury – ("In the post retrieval study most explants of all patients with chronic pain in their history indicate nerve fibres and fascicles in the interface of the mesh. Today, immunohistochemical stains relieve even the detection of smallest nerve structures which are mainly found in the foreign body granuloma. Due to the nature of the granuloma as a chronic inflammation it may be speculated that these nerve structures are irritated by the inflammation and cause the sensation of pain"); ETH.MESH.00870466 (6/20/06 notes re: Ethicon Expert Meeting) – "Meshes can cause Nerve damage due to mechanical irritation (mesh bears on nerve)…. Vaginal pain after implantation of meshes is rare, but feared, since there is not real treatment option"); HMESH_ETH_01800994 (10/11/06 internal e-mail chain discussing mesh pain/shrinkage literature) ("The take home message from the article was that chronic pain can be

associated with placement of a mesh device…. [The author] continues to point out that neuropathy-related complaints after intraoperative damage of nerve fibers is associated with pain immediately after surgery, however, the onset of chronic pain as a consequence of the „foreign body reaction" is typically more than one year after the hernia repair. He goes on to point out that patients that reported chronic pain demonstrated nerve fibers and fascicles in the interface of the mesh upon examination upon removal."); HMESH_ETH_00144721 (2/11/08 internal e-mail) – "Peripheral nerve irritation following synthetic mesh implantation can be implant-related or procedure-related. Implant-related factors include foreign body tissue reaction, fibrotic tissue response and shrinkage."); ETH.MESH.01238483 (4/27/09 internal memo) – "Vaginal discomfort is the most troublesome complication of transvaginal mesh and mostly determined by ... Host interaction with the mesh as it relates to chronic inflammation, excessive fibrosis and 'stiffness' from scar plating creating nerve entrapment and or nerve tethering."); ETH.MESH.05479695 (Nov. 3-4, 2010 Mesh and Textile Summit PowerPoint) – "Studies of explanted meshes: • Nerve fibers and fascicles in the interface of mesh • The nerve structures are irritated by the inflammation and cause sensation of pain [citing 2005 article].").

[20] ETH.MESH.05455879 (1/18/03 notes from Surgeon Panel Meeting).

[21] ETH.MESH.13375497 (10/1/08 internal PowerPoint).

[22] ETH.MESH.01994703 (8/23/07 e-mail chain regarding Lobodasch cadaver lab and clinical experience with Gynemesh PS) ("Yes. Dr. L said he likes that the UP mesh straps are less crumpled and entangled after pullout of the mesh from the cadaver, than the Gynemesh PS. In my own summation, he prefers the UP because it appears to have less memory and not retain creases and bunching upon placement. In our US labs with Dr. Miller, Sepulveda, etc. it was noted by us that upon removal, UP had not reached its elastic limit like PS does (it was not all stretched out at the root of the straps as is seen in Gynemesh PS).").

[23] ETH.MESH.12003000 (1/21/09 literature review) – concluding "The blind passage of the trocars in the TVM procedure could cause injury of the surrounding anatomical structures.").

[24] de Tayrac R et al., Complications of POP Surgery and Methods of Prevention, Int. Urogynecol. J. 2013; 24:1859-1872.

[25] Karram M, Maher C, Surgery for Posterior Wall Prolapse. Int. Urogynecol. J. 2013; 24(11): 1835-41.

[26] Maher C, Anterior Vaginal Compartment Surgery. Int. Urogynocol. J. 2013; 24:1291-1802; Ostergard D, Evidence-based Medicine for Polypropylene Mesh Use Compared with Native Tissue Repair. Urology 79: 12-15, 2012.

[27] Gutman et al., Three-Year Outcomes of Vaginal Mesh for Prolapse. Obstet Gynecol 2013; 122:770-7.

[28] French Nat"l Auth. for Health, Dept. of Evaluation of Medical and Surgical Procedures, Nov. 2006.

[29] ETH.MESH.00012009 (6/27/06 Clinical Study Report), p. 12070.

[30] ETH.MESH.00012009 (6/27/06 Clinical Study Report), p. 12061.

[31] ETH.MESH.00741137 (6/26/06 memo to Ethicon) – "Prof. Jacquetin"s data has not proved as positive as hoped – showing approx 80% success rate – The data will be initially presented at IUGA in September. Note that this data is a retrospective study of over 100 patients using TVM technique, not necessarily Prolift. This less than 90% success rate forces us to differentiate Prolift from the TVM technique moving forward.").

[32] ETH.MESH.01771546 (6/28/06 Clinical Study Report).

[33] ETH.MESH.01771546 (6/28/06 Clinical Study Report), pp. 1550, 1575, 1586-87, 1592 and 1594.

[34] Id., p. 1588.

[35] Id.

[36] ETH.MESH.00821702 (9/26/07 internal memo reporting results of 2004 European clinical study of Prolift).

[37] ETH.MESH.05455879 (1/18/03 notes from Surgeon Panel Meeting) - "Polypropylene - initial acute inflammation then chronic foreign body reaction….Reaction after 6 years."); ETH.MESH.02017153 (3/06/07 Minutes from an Ethicon Expert Meeting) ("Polypropylene meshes might not be improvable in terms of shrinkage, we may need a completely new material…."); ETH.MESH.02247342 (9/26/08 internal PowerPoint "The Journey from Prolift to Prolift +M") ("Polypropylene creates an intense inflammatory response…. The excessive inflammatory reaction to heavyweight Polypropylene tends to form a scar plate around the prosthetic that results in a firm and contracted mesh…."); ETH.MESH.00271215 (10/29/08 internal e-mail) – Polypropylene is "the best of a bad lot re integration/retraction" and "there is a need to develop grafts that mimic the human tissue mechanical properties."); ETH.MESH.00680021 (11/12/08 internal e-mail) – "Polypropylene creates an intense inflammatory response that results in rapid and dense incorporation into the surrounding tissue. The excessive inflammatory reaction caused by heavyweight meshes tends to form a scar plate around the prosthetic that results in a firm and contracted mesh."); ETH.MESH.03722384 (9/17/09 internal e-mail) – "We're seeing a lot of work published that indicates that polypropylene produces an ongoing, chronic inflammatory reaction…Might be better off working with something that is less reactive, like PVDF."); ETH.MESH.01238483 (4/27/09 internal memo) – "Vaginal discomfort is the most troublesome complication of transvaginal mesh and mostly determined by ... Host interaction with the mesh as it relates to chronic inflammation, excessive fibrosis and 'stiffness' from scar plating creating nerve entrapment and or nerve tethering.""); ETH.MESH.05237872 (Nov. 3-4, 2010 "Mesh and Textile Summit") – PowerPoint addressing downsides of "old fashioned" (i.e., polypropylene mesh): "Excessive

foreign body reaction; Chronic inflammation; Decreased fibrocollagenous ingrowth; Scar plate formation; Shrinkage from bridging fibrosis.").

[38] ETH.MESH.12009657 – (4/06/01 internal memo listing disadvantages of Prolene Soft Mesh/Gynemesh PS) – "VOC: too stiff for use in vaginal tissues."); ETH.MESH.02141727 (5/09/08 internal PowerPoint) – "There is still NO evidence of a Device created specifically for the female pelvis." (p. 4); "Pelvic Floor materials are still over-engineered → we need less foreign body material → materials that correlate to measured female pelvic values." (p. 6)); ETH.MESH.09650760 (11/21/08 invention disclosure) – "Mesh based implants which are currently used in pelvic floor reconstruction are based on mesh constructions originally designed for the treatment of hernias in the abdominal wall region. It is important to understand that the biomechanical properties of the abdominal wall and the pelvic floor differ especially in regard of elasticity and anisotropic material behavior. To fulfill the desired biomechanical compatibility of mesh based implants for pelvic floor reconstruction, it is important to take the biomechanical properties of the implantation site into consideration."); ETH.MESH.02010834 (2/16/11 internal memo "Biomechanical consideration for Pelvic floor mesh design") – p. 2 ("The ideal mesh for prolapse repair which mimics precisely the biomechanical needs of the pelvic floor region has not been developed…. Pain and discomfort can result from stiff mesh that were originally designed for hernia surgery and „over-engineered" to exceed the burst strength of the abdominal wall at the cost of losing compliance [citing 2009 literature]…. [T]here is significant evidence that the complications associated with synthetic meshes can cause significant morbidity including infection, erosion, exposure, and pain [citing 2000 and 2007 literature]…."); ETH.MESH.08315779 (9/25/12 Ethicon internal report), p. 5782 – "[S]ynthetic mesh implants, even the lower mass mesh implants, are significantly stronger than required.").

[39] ETH.MESH.00870467 ETH.MESH.02017153 (3/06/07 Minutes from an Ethicon Expert Meeting) – "Prof. Cosson questions if Polypropylene is the best material as fractures are observed in pp [sic] after time."); HMESH_ETH_02860031 (7/06/07 internal e-mail from Ethicon Research Fellow regarding "dog" study) – "I recall the long-term dog study did show some „fibrillation" of PROLENE suture where none was observed for PRONOVA suture. My polymer colleagues tell me that PP has the potential to do this because of its molecular structure."); ETH.MESH.05588123 (7/09/07 internal memo responding to mesh degradation literature) – "There have been a number of anecdotal reports that PP mesh shows some changes in the surface with time. The Aachen group, who has so far collected more than 1000 explanted meshes, showed examples many years back…. We did different tests in-house with accelerated aging, too, and found microscopic changes in the surface of mesh fibres."); HMESH_ETH_00228962 (2/17/10 internal e-mail chain discussing literature about polypropylene degradation) – "[W]e know from literature that polyester and even polypropylene tend to alter over time in the body…. [H]ow has the general surgery group responded to this [degradation literature]?...[W]e proposed for several new product developments...to use PVDF or PRONOVA as a more stable filament, however Senior Management decided to go ahead with PP as a standard." (HMESH_ETH_00228961)); ETH.MESH.10578304 (1/18/11 Minutes of PA Consulting Group Meeting regarding Mesh Erosion) – "PP meshes degrade over time following implant; this is observed at very high magnification (using electron microscopy) as „fractures" in the surface of the extruded fibres which cause particulates of PP to be produced which can break

away from the main fibre."); ETH.MESH.14445346 (1/17/12 PowerPoint), Slide 11 (comparing Polypropylene to PVDF) – "PP – Stress cracking after 2 years of implantation [citing Mary article from 1998]… PP – In vivo degradation of PP [citing Clave article from 2009]."); ETH.MESH.07726993 (3/12/12 Ethicon internal memo in response to article reporting polypropylene mesh degradation) – "In an infected field and/or a site of chronic inflammation, it is not unexpected that there will be an increase in free radicals and other reactive oxygen species. Polymers may be subject to surface degradation by these reactive species, the impact of which has not been clinically assessed.").

[40] ETH.MESH.03928881 (1/11/05 internal e-mail from Ethicon European Medical Director urging that warning be added to Prolift IFU) – "WARNING: Early clinical experience has shown that the use of mesh through a vaginal approach can occasionally/ uncommonly lead to complications such as vaginal erosion and retraction which can result in anatomical distortion of the vaginal cavity that can interfere with sexual intercourse….This must be taken in consideration when the procedure is planned in a sexually active woman."); ETH.MESH.03915690 (5/13/05 internal memo) –" [Gynemesh PS for POP repair]…can lead to other complications such as…mesh retraction…. Mesh retraction („shrinkage") is a more uncommon complication but it is considered more serious. It can cause a vaginal anatomic distortion, which may eventually have a negative impact on sexual life. Its treatment is difficult."); ETH.MESH.03906579 (6/09/05 interview with Ethicon European Medical Director) – "Shrinkage is due to an excessive scarring process...in a few cases it led to vaginal distortion impacting the sexual life. Thus, the procedure must be used cautiously in sexually active women."); ETH.MESH.02017153 (3/06/07 Minutes from an Ethicon Expert Meeting) ("Polypropylene meshes might not be improvable in terms of shrinkage, we may need a completely new material… Unmet clinical needs: No shrinkage/no long term contraction… Severe contraction –> Dyspareunia –> sexual function ↓.").

[41] ETH.MESH.00870467 (6/20/06 notes re: Ethicon Expert Meeting) – "Optimum pore size is material dependent (critical pores size; at least 1-2mm), scar formation a combination of pore size, surface area, polymer…. Small pores: interconnection between mesh pores due to fibroses leading to mesh shrinkage…. Tension of the mesh changes pore size → change in elasticity…."); ETH.MESH.01752532 (9/18/06 internal memo) – "Large-pore mesh integrates in a loose network of perifilamentous fibrosis with fat tissue present in between. In contrast, the small-pore mesh incorporates entirely in perifilamentary granulomas and scar tissue, which bridged the whole pore diameter of less than 1 mm [citing literature from 2002]. It appears that the greater distance between pores resists the ability of „bridging fibrosis" …, contributing to improved compliance and theoretically less passive compression or shrinkage of the biomaterial…. The applicability of meshes as a prosthesis in the pelvic floor region is dependent on various mesh properties. A suitable mesh should offer a pore size >1mm and feature lightweight properties to avoid the occurrence scar plate formation."); ETH.MESH.10511708 (12/12/06 internal R&D PowerPoint "State of Knowledge in Mesh Shrinkage") – "The tissue incorporation of a mesh prosthesis is proportional to its pore size, since macroporous structures are required for the entrance of macrophages, fibroblasts, blood vessels and collagen fibers. Larger pores allow for faster ingrowth into the mesh, which results in less contraction. On the other hand, the small pore mesh incorporates entirely in perifilamentary granulomas and scar tissue, which bridge the whole

pore diameter. This so called „fibrotic bridging" is a phenomenon that is believed to be closely related to mesh shrinkage and is usually observed in all mesh modifications with pore sizes of less than 1 mm…. Conclusion - the „ideal mesh": Taking all these abovementioned facts into consideration, the ideal mesh could appear as follows:… pore size > 1mm."); ETH.MESH.01782867 (2/24/07 internal PowerPoint "Factors related to mesh shrinkage"), p. 6 – "Small porous meshes (<1 mm) lead to „fibrotic bridging" → increased shrinkage…. Pore size – The tissue incorporation of a mesh prosthesis is proportional to its pore size… Larger pores allow for faster ingrowth into the mesh, which results in less contraction. On the other hand, the small pore mesh incorporates entirely in perifilamentary granulomas and scar tissue, which bridge the whole pore diameter. This so called „fibrotic bridging is a phenomenon that is believed to be closely related to mesh shrinkage and is usually observed in all mesh modifications with pore sizes of less than 1mm."); ETH.MESH.02588170 (1/22/08 internal memo regarding desired mesh design features) – "4. shrinkage/stiffening 1. pore size > 3 mm 2. pore size > 1 mm under stretch (mesh + stress shielding component only) • stress shielding of mesh implant (duration < 7d) (Abramov 2006).…Mesh pore size varies under the impact an applied load."); ETH.MESH.02247342 (9/26/08 internal PowerPoint "The Journey from Prolift to Prolift +M") ("The excessive inflammatory reaction to heavyweight Polypropylene tends to form a scar plate around the prosthetic that results in a firm and contracted mesh….Bridging occurs in all mesh modifications with a granuloma size around each mesh fiber exceeding more than half of the pore size of the mesh. Desirable pore size > 1mm."); ETH.MESH.02010834 (2/16/11 internal memo "Biomechanical consideration for Pelvic floor mesh design") – p. 13 ("Lightweight mesh with reduced polypropylene density and larger pore sizes between filaments has shown a pronounced reduction in inflammation and improved integration into surrounding tissue in humans [citing 1999 literature]…. Large-pore mesh integrates in a loose network of perifilamentous fibrosis with fat tissue present in between. In contrast, the small-pore mesh incorporates entirely in perifilamentary granulomas and scar tissue, which bridged the whole pore diameter of less than 1 mm [citing 2002 literature]. It appears that the greater distance between pores resist the ability of „bridging fibrosis"…, contributing to improved compliance and theoretically less passive compression or shrinkage of the biomaterial."), p. 14 ("[P]ore size is a crucial measure for the safety and efficacy of mesh implants. Whether or not an implant may be exposed to scar plate formation is determined, in part, by the obtained pore size.").

[42] ETH.MESH.12873534 (10/25/13 internal e-mail "Poresize for Prolene Soft Mesh") (showing measurements of pores averaging .03, .04, .07, .10, .11, .12, .40, .44, .47, .54 mm^2; the average pore size across all measured pores < 1 mm^2). Not all pores were measured.

[43] ETH-00252.

[44] HMESH_ETH_00120151 (1/28/13 internal e-mail regarding pore size of Prolene Soft) "[P]ore size measurements vary if the mesh is pulled even lightly in any direction.").

[45] ETH.MESH.00877490 (9/8/05 Prolift Poster Presentation by Michel Cosson) "„We can recommend the use of mesh for prolapse surgery, especially patients with big prolapses, and recurrent prolapses," he said, noting that women with grade 4 prolapse and greater are better suited for mesh surgery than patients with less severe disease.").

[46] ETH.MESH.05246528 (3/10/05 report discussing areas impacting clinical outcomes with mesh) – "Tissue contraction (20-40%).

[47] ETH.MESH.03910418 (11/25/02 internal e-mail regarding, inter alia, mesh shrinkage in TVT) – "As we discussed the shrinkage rate is influenced by many parameters as the degree of fibrotic reaction is dependent on the mesh material/weave/width etc. I remember that Axel [Arnaud, Ethicon‟s European Medical Director] was using 30% shrinkage as a rule of thumb…."); ETH.MESH.00584846 (5/10/04 internal e-mail) – "Their [consulting physicians‟] main concern is now the shrinkage of the mesh which may lead to pain, dyspareunia…Indeed now that they have tremendously improved the technique and lowered the erosion rate what needs to be improved is the shrinkage of the mesh (in this case gynemesh soft)."); ETH.MESH.00681364 (9/07/04 internal report) – "GYNEMESH PS today has a 'swirling effect' causing what doctors have expressed as 'shrinkage or contraction of the mesh'. It isn't the mesh that's contracting, it‟s the tissue that seems to be 'bunching' up resulting in the desire to have a more 'tension-free' fixation."); ETH.MESH.05574759 (1/18/05 internal e-mail reporting surgeon‟s experience with use of Gynemesh in pelvic floor repair) – "a. contraction pulls against the side wall and causes pain b. it causes a hard tissue which can be felt by patient and sexual partner c. it can lead to a balling up of the mesh which is very uncomfortable d. it can lead to suture line dehiscence e. it can lead to prolapse recurrence…. 5) he confirmed our thoughts regarding the correlation between inflammation, foreign body response and scar formation."); ETH.MESH.04020138 (4/13/05 e-mail from Ethicon engineer) – "In pelvic floor repair even with the PSM, we have seen some scar contracture which translates into procedural complications… [S]urgeons who are our consultants on the ProLift product are asking for a mesh which is better than PSM in this area." (Id.). "The surgeons attribute these conditions [recurrence of prolapse, pain, stiffness, erosion and discomfort during sex] to scar contracture."); ETH.MESH.03915690 (5/13/05 internal memo) –"Although [Gynemesh PS for POP repair] significantly reduces recurrences, as compared to traditional repair, it can lead to other complications such as…mesh retraction…. Mesh retraction („shrinkage‟) is a more uncommon complication but it is considered more serious. It can cause a vaginal anatomic distortion, which may eventually have a negative impact on sexual life. Its treatment is difficult."); ETH.MESH.03906579 (6/09/05 interview with Ethicon European Medical Director, Axel Arnaud) – "Shrinkage is due to an excessive scarring process...in a few cases it led to vaginal distortion impacting the sexual life. Thus, the procedure must be used cautiously in sexually active women."); ETH.MESH.05243265 (1/24/06 e-mail discussing meeting with consulting physicians in Europe) – "Their [physicians‟] main concern is the believe that the Prolene Soft material over time contracts. Thus creating the potential for failures and/our erosions."); ETH.MESH.03906525 (1/27/06 internal PowerPoint by Ethicon‟s European Medical Director), Slide 30 ("Mesh must not shrink. Rationale: to preserve the vaginal anatomy and to avoid recurrences. Theory: The scar tissue naturally shrinks up to 70% in the wound area during the healing process. Physiological wound contraction increases with the extent of inflammation. Shrinkage could be minimized by reducing the inflammatory reaction: well tolerated material, large pores."); ETH.MESH.00585938 (2/13/06 internal report on meeting of physician consultants): "The [TVM] group is strongly looking forward to the potential for new materials for the Prolift product. Their main concern is the believe that the Prolene Soft material over time contracts. Thus creating the potential for failures and/our erosions.");

ETH.MESH.00870466 (6/2/06 Expert Meeting Memo) ("Shrinkage of 20% means reduction of mesh area to 64%."); ETH.MESH.03160750 (11/15/06 internal e-mail from Ethicon European Medical Affairs Director) – "It came up that there are two issues with Prolift: erosion and shrinkage…The responsibility of the mesh seems to be more established regarding shrinkage…."); ETH.MESH.10511708 (12/12/06 internal R&D PowerPoint "State of Knowledge in Mesh Shrinkage") – "„Shrinking meshes" are a topic of discussion and concern among hernia surgeons. It is believed that mesh shrinkage may lead to patients' discomfort, chronic pain or hernia recurrence…. Mesh shrinkage was evaluated at different time points and the reduction of the calculated area was 12% at one month, 24% at 3 months, 29% at 6 month and 34% at 12 month. [citing 2006 literature]"); ETH.MESH.02017153 (3/06/07 Minutes from an Ethicon Expert Meeting) ("Polypropylene meshes might not be improvable in terms of shrinkage, we may need a completely new material… Unmet clinical needs: No shrinkage/no long term contraction… Severe contraction → Dyspareunia → sexual function ↓."); ETH.MESH.00821702 (9/26/07 internal memo reporting results of 2004 European clinical study of Prolift), Slide 23 – ("Functional results: painful mesh shrinkage. Painful mesh shrinkage (at vaginal examination) – 21 patients (19.6%)…. Correlation between painful mesh shrinkage and dyspareunia but not systematic."); ETH.MESH.01818382 (12/20/07 Ethicon Mesh Contraction preclinical study) (27% shrinkage (measured radiographically) and 23% (measured by image analysis), as well as fibrotic bridging, folding, rippling and distortion, for Prolene Soft in the subcutaneous model after 13 weeks implantation); ETH.MESH.00836975 (3/28/08 internal e-mail from Ethicon Worldwide Medical Director responding to question about how to identify and complications associated with mesh shrinkage) – "First, the mesh doesn"t shrink. As collagen grows into the mesh, the entire mass contracts…. In the patient, it can be noted with stiffening of the vaginal wall (causing dyspareunia) or bunching of the Prolift straps (which can cause pain). All patients getting mesh get contraction."); ETH.MESH.01238483 (4/27/09 internal memo) – "Vaginal discomfort is the most troublesome complication of transvaginal mesh and mostly determined by ... Host interaction with the mesh as it relates to chronic inflammation, excessive fibrosis and 'stiffness' from scar plating creating nerve entrapment and or nerve tethering."); ETH.MESH.02227282 (11/14/09 PowerPoint), p. 7 – "Folding of mesh is one cause for erosion and pain."); ETH.MESH.05479695 (Nov. 3-4, 2010 Mesh and Textile Summit PowerPoint) – "There is no place for a „Heavyweight Mesh" in modern pelvic floor repair… Polypropylene Mesh – Small pore size (<1 mm)… Issues with small pore meshes –…Increased inflammatory response results in rigid scar plate formation – Scar plate responsible for shrinkage of mesh up to 40% [citing published literature from 2002 and 2004].").

[48] ETH.MESH.00821702 (9/26/07 internal memo reporting results of 2004 European clinical study of Prolift).

[49] ETH.MESH.03928881 (1/11/2005 internal email).

[50] ETH.MESH.00012009 (6/27/06 Clinical Study Report), p. 12070.

[51] ETH.MESH.02001398 (Prolift IFU version P19070/G).

[52] ETH.MESH.00012009 (6/27/06 Clinical Study Report), p. 12061.

[53] ETH.MESH.01203957 (11/15/08 PowerPoint slide authored by Piet Hinoul), Slide 8.

[54] ETH.MESH.05631478 (8/16/02 internal e-mail discussing article describing mesh-related nerve injury – ("In the post retrieval study most explants of all patients with chronic pain in their history indicate nerve fibres and fascicles in the interface of the mesh. Today, immunohistochemical stains relieve even the detection of smallest nerve structures which are mainly found in the foreign body granuloma. Due to the nature of the granuloma as a chronic inflammation it may be speculated that these nerve structures are irritated by the inflammation and cause the sensation of pain"); ETH.MESH.05455879 (1/18/03 notes from Surgeon Panel Meeting) – "Nerve entrapment with chronic pain - Persistent chronic pain from foreign body reaction – greater fibrosis greater complaints – Scar plate with nerve entrapment – sometimes after one year there are no complaints and then complaints happen – often the result of tiny nerves in the granuloma not just a matter of not damaging the major nerves such as N ilioinguinalis or R genitalis - even if you care for the big nerves you can't prevent pain."); ETH.MESH.00870466 (6/20/06 notes re: Ethicon Expert Meeting) – "Meshes can cause Nerve damage due to mechanical irritation (mesh bears on nerve)…. Vaginal pain after implantation of meshes is rare, but feared, since there is not real treatment option"); HMESH_ETH_01800994 (10/11/06 internal e-mail chain discussing mesh pain/shrinkage literature) ("The take home message from the article was that chronic pain can be associated with placement of a mesh device…. [The author] continues to point out that neuropathy-related complaints after intraoperative damage of nerve fibers is associated with pain immediately after surgery, however, the onset of chronic pain as a consequence of the „foreign body reaction" is typically more than one year after the hernia repair. He goes on to point out that patients that reported chronic pain demonstrated nerve fibers and fascicles in the interface of the mesh upon examination upon removal."); HMESH_ETH_00144721 (2/11/08 internal e-mail) – "Peripheral nerve irritation following synthetic mesh implantation can be implant-related or procedure-related. Implant-related factors include foreign body tissue reaction, fibrotic tissue response and shrinkage."); ETH.MESH.13375497 (10/1/08 internal PowerPoint) (Regarding mesh-related pain "The tissue reaction at the mesh implant is like a chronic wound, present for years and years after the implantation," and studies of explanted meshes show "Nerve fibers and fascicles in the interface of the mesh…The nerve structures are irritated by the inflammation an cause sensation of pain."); ETH.MESH.01238483 (4/27/09 internal memo) – "Vaginal discomfort is the most troublesome complication of transvaginal mesh and mostly determined by ... Host interaction with the mesh as it relates to chronic inflammation, excessive fibrosis and 'stiffness' from scar plating creating nerve entrapment and or nerve tethering."); ETH.MESH.05479695 (Nov. 3-4, 2010 Mesh and Textile Summit PowerPoint) – "Studies of explanted meshes: • Nerve fibers and fascicles in the interface of mesh • The nerve structures are irritated by the inflammation and cause sensation of pain [citing 2005 article].").

[55] ETH.MESH.00900574 (2/05/04 email between Research & Development manager and physician who participated in Prolift developments) "Since you became aware of the potential for tissue tearing during strap placement, have you been able to observe this phenomenon in surgery?" "yes many times unfortunately, with in these cases the problem of the mesh being to large at the end of the procedure, already shrinking…. I think that it is a major concern.").

[56] ETH.MESH.03911687 (11/25/05 e-mail discussing European physician expressing concerns about Prolift arms) – "[doctor] believes that, after retrieval of the canula, the straps take a rope-like shape which is not optimal in his opinion. He has observed that some patients have discomfort as they can feel the straps with Prolift."); ETH-48281 (3/5/09 internal e-mail) ("[Competing mesh manufacturer] has been talking to doctors about the „banding" effect that occurs with the anterior Prolift… The banding that customers are telling me occurs at the edge of the mesh near the apex. Regardless of how doctors adjust the mesh, there is still a definite ridge or banding that can be vaginally palpated with our anterior mesh."); ETH.MESH.04097128 (May 1, 2009 internal e-mail discussing mesh arm "banding") – "the reported clinical information described a post-operative PROLIFT Mesh arm „banding"…, which led to the mesh recipient"s „discomfort" during sexual intercourse. „Mesh banding" describes tension build up on a given part of the pelvic floor mesh. The tension might have been introduced to the mesh at the time of mesh placement, or tension could have built up on the mesh arm as pelvic tissue incorporation into the mesh progressed. Tissue incorporation into the PROLIFT Mesh is an expected in vivo mesh behavior…."); ETH.MESH.07171404 (9/03/09 internal e-mail regarding alternative design to Prolift arms) – discussing how new mesh design "is fixed in a very different (more „dynamic") way than Prolift (fixed and really pulling on the ligaments and muscles via the arms)", and explaining that new products "offer a similar solution to the shrinkage and curling of the mesh" seen with Prolift.); ETH.MESH.08020093 (2/10/10 internal e-mail) ("many docs still split Prolift when using it, and Prosima might be a better option for those docs. We aren"t seeing the banding (ridge of tissue) from spine to spine that we see with other anterior mesh kits. Probably because we don"t have attachment points….").

[57] ETH.MESH.07237575 (9/19/11 internal e-mail containing Medical Director"s response to inquiry about mesh repair systems without arms) – "Mr. Hinoul explains that the arms were meant to keep the mesh in place, but it appears to be technically (too) difficult for surgeons: often they do not go deep enough, which could result in folding of the mesh and exposure of the arms. That is why other types were developed, also by Ethicon. Mr. Hinoul shows examples the Prolift and Prolift +M meshes. Efforts were made to make the mesh lighter and more absorbable than the Ultrapro mesh for hernia, which was rather stiff. More density of the mesh causes more scars. The mesh itself does not shrink, scar tissue is the problem. This problem is not described in the Patient Information Folder, though it is mentioned under „Pain.""").

[58] ETH.MESH.01771546 (6/28/06 Clinical Study Report), p. 1550 – clinical study reflecting rates for incontinence (20%) and voiding dysfunction (10.6%)); ETH.MESH.00012009 (6/27/06 Clinical Study Report), p. 12062 – clinical study reflecting 26.7% incontinence rate and 22.2% urinary tract infection rate); ETH.MESH.00821702 (9/26/07 internal memo reporting results of 2004 European clinical study of Prolift) – reporting several types of "de novo" voiding problems with rates); ETH-80249 (10/28/05 e-mail from Ethicon Med. Dir. David Robinson, describing Prolift Total cases: "In folks with normal preop voiding function, who then post Prolift can"t void [due to bladder atony]…. Some have resolved spontaneously but have taken as long as a year to do so…[t]he cases seem to have no common thread or any difficulty with the surgery itself. But if this starts getting reported, it is going to scare the daylights out of docs…."); ETH-80297 (1/26/06 e-mail chain re: revision of Prolift IFU: "Dissection for Prolift and any similar

procedure has the potential to impair normal voiding for variable length of time."). See also, ETH-01762 (proposed revised IFU to include voiding dysfunction warning).

[59] Hansen, B., et al., Long-Term Follow-up of Treatment for Synthetic Mesh Complications, Female Pelvic Med & Reconstr Surg 2014, 20:126-130; Barski D, et al., Systematic review and classification of complications after anterior, posterior, apical, and total vaginal mesh implantation for prolapse repair. Surg Technol Int. 2014, 24:217-24.; Shah, et. al., Mesh complications in female pelvic floor repair surgery and their management: A systematic review. Indian J Urol. 2012 Apr; 28(2):129-53; Feiner, B., et al., Vaginal Mesh Contraction: Definition, Clinical Presentation and Management, Obstet Gynecol 2010, 115:325-330; Morrisoe, S., et al., The use of mesh in vaginal prolapse repair: do the benefits justify the risks? Current Opinion in Urology 2010, 20:275-279; Blandon, et al., Complications from vaginally placed mesh in pelvic reconstructive surgery, Int Urogynecol J 2009, 20:523-31; Jacquetin, B, Complications of Vaginal Mesh: Our Experience, Int Urogyn J, 2009, 20:893-6.